

## MEMORANDUM

TO: Paul E. Foster, P.E.

THROUGH: Tammy M. Henry, P.E.

FROM: Shaikh A. Tayeb, Ph.D., P.E.

**SUBJECT: Title V Permit Renewal; Draft/Proposed Permit: AQM-003/00111-Renewal 2**  
Delaware Solid Waste Authority-Cherry Island Landfill

DATE: March 7, 2012

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*This memorandum (report) summarizes the outcome of application review of DSWA-Cherry Island Landfill's (CIL's) Title V renewal application. DSWA submitted the current application on time but delayed the submission of the dispersion modeling results requested by the Department (DAQ). The report identifies that the application does not include any new construction regarding the landfill gas (LFG) collection and control system that may cause additional emissions from the site. It also recommends that the flare emissions, in some cases, be decreased.*

### Report high-lights

- Table 1: Chronology.
- Table 2: Emission units.
- Table 3: Existing permits.
- Table 4: Latest emissions from the site.
- Table 5: PTEs.
- Table 6: Five years NO<sub>x</sub> and SO<sub>x</sub> emissions.
- Table 7: Dispersion modeling.
- Table 8: H<sub>2</sub>S data.
- Table 9: Changes requested by DSWA and DAQ comments
- Table 10: Additional changes recommended
- Pages 5 -6: H<sub>2</sub>S dispersion modeling results and the new lbs/hr SO<sub>2</sub> emission limit.
- Pages 12: Regulations.
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- Page 13: Conclusion/Recommendations.

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## BACKGROUND

On 1/14/11, Delaware Solid Waste Authority (DSWA) submitted a Title V renewal application with a cover letter dated 1/11/11 to the Department for Cherry Island Landfill (CIL or the facility). The cover letter requested nine (9) changes to their existing Title V operating permit. The facility's responsible official Richard P. Watson, P.E., BCEE signed the application. CIL, owned by DSWA, is located at the Northern Solid Waste Management Center (NSWMC). The address of NSWMC is 1206 E. 12<sup>th</sup> Street, Wilmington, New Castle County, Delaware. The Renewal 1 was issued to DSWA on 1/19/07 with an expiration date 1/19/12.

- The facility is not subject to the requirements of Section 112(r) of the 1990 Clean Air Act.
- The facility has not registered with the State of Delaware "Regulations for the Management of Extremely Hazardous Substances."
- Title VI is not applicable to the facility.
- DSWA has not requested any information to be held confidential.
- The facility is up to date with its Title V fees.

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Several follow ups of additional information was received as part of the above referenced application.

### CHRONOLOGY OF ADDITIONAL INFORMATION RECEIVED

The following table summarizes the additional information received from DSWA in chronological order:

Table 1: Chronology of additional information received.

Date	Subject	Comments
3/1/11	DAQ sent a letter to DSWA requesting the following information: <ul style="list-style-type: none"><li>Form AQM-1001A for combustion unit (flare).</li><li>Form AQM-1001BB for compliance certification.</li></ul> The application was judged administratively incomplete.	DSWA responded on 3/28/11.  The application was judged administratively complete upon receiving this information.
4/14/11	Exhibit W with emissions calculation.	DSWA revised Exhibit W (emissions information) on 4/14/11.
10/17/11	Two newly constructed headers to update the landfill gas (LFG) collection system.	DSWA submitted letter dated 10/11/11 requesting to include 18" and 24" headers to Renewal 2.
12/12/11	DSWA submitted the dispersion modeling results prepared by SCS Engineers.	This information addresses the compliance requirements of H <sub>2</sub> S as per <b>7 DE Admin Code</b> 1103, Section 9.

#### Technical review delayed

DAQ requested that the facility submits justification on how it complies with H<sub>2</sub>S Ambient Air Quality Standards (AAQS) as outlined by **7 DE Admin Code** 1103, Section 9. In addition, the information used in dispersion modeling can also be used in setting new limits for SO<sub>2</sub> flare emissions.

The standards shown below:

- The average concentration of hydrogen sulfide taken over any consecutive three minutes shall not exceed 0.06 ppm.
- The average concentration of hydrogen sulfide taken over any consecutive 60 minutes shall not exceed 0.03 ppm.

DAQ first discussed with DSWA about the dispersion modeling in October 2010. Despite several reminders, DSWA took a considerably long time to submit the dispersion modeling results to DAQ (results received by DAQ on 12/12/11).

#### H<sub>2</sub>S pretreatment system is no longer at the site

CIL had a H<sub>2</sub>S pretreatment system at the site. In reality, this unit has never been operational for various technical reasons except for initial start-up and performance testing. The construction permit for this unit was issued in May 2006 when the landfill experienced high H<sub>2</sub>S concentration in LFG (up to 890 ppm). It can be noted that the site recorded up to 1988 ppm of H<sub>2</sub>S in LFG in 2004.

The existing Title V permit includes two low-NO<sub>x</sub> enclosed flares with a H<sub>2</sub>S pretreatment system (LO-CAT). This unit was out of the facility since August 2011 and I learned about it in September of the same

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year. DSWA cover letter attached with the application states, "The system does not meet the needs of the landfill." This statement is based on the fact that H<sub>2</sub>S concentrations in LFG are consistently low compared to those recorded in the past. DSWA claims that "...the reduced H<sub>2</sub>S levels have resulted from successful DSWA program changes implemented in cooperation with DNREC. These include segregation of large clean unpainted pieces of gypsum wallboard for recycling and use of alternate daily cover material that is made from ground construction and demolition waste that has been sorted to remove gypsum wallboard." On 2/8/12, DSWA onsite engineer confirmed me to the following: DSWA no longer sends material received at CIL out to Burns\* to be shredded. C&D received at CIL is landfilled. Clean large pieces of wallboard are segregated separately and marketed for reuse. The reduction in sulfur content of the landfill gas most likely came from several sources, including the segregation of wallboard done by Burns, the discontinuation of using stabilized sludge as a cover material and the usage of Clean Earth as a cover material.

Based on DSWA application, emission units have been updated in the attached draft permit by removing the H<sub>2</sub>S system from the list.

\*Burns- Richard S Burn & Co.

## EMISSION UNITS

Table 2 below shows a list of emission units.

Table 2: Emission units.

Emission Units	Emission Unit Description
Emission Unit 1	Twelve (12) portable passive elevated combustion flares.
Emission Unit 2	ZULE –A ("Zink-A"): Low-NO <sub>x</sub> enclosed flare with a maximum rated gas flow rate of 4500 scfm.
Emission Unit 3	ZULE –B ("Zink-B"): Low-NO <sub>x</sub> enclosed flare with a maximum rated gas flow rate of 4500 scfm.
Emission Unit 4	Landfill gas collection and control system.
Emission Unit 5	Gas Treatment Plant ("Gas Plant").
Emission Unit 6	55 KW Diesel fired emergency generator.

## EXISTING PERMITS

The following table shows the existing 7 **DE Admin Code** 1102 permits.

Table 3: Existing permits.

Reference	Existing permits
APC-95/0466	APC-95/0466-Operation, dated May 15, 1995. Twelve (12) portable passive flares.
APC-2004/0746	APC-2004/0746-Operation(NSPS)(MACT), dated February 4, 2008. Two Low-NO <sub>x</sub> enclosed flares.

## EMISSIONS

The facility is not expected to increase the overall flare emissions. There are minor changes (emissions are decreased) in PM, NMOCs and HCl emissions (Memo: See Table 5 on Page 4; Permit: See Condition 3-Table 1(b)(1)(ii), Page 19). The facility's rolling 12-month tpy emissions, as per 2010 emissions inventory report (2011 report is not available at this time), are in compliance. The latest rolling 12-

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month flare emissions as of December 2011 are also in compliance with the emissions outlined by the existing Title V permit.

Table 4: Rolling 12-month flare emissions as of December 2011.

	NMOCs	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM	HCl
Rolling 12-month flare emissions (tpy)	0.03	1.21	2.83	3.33	0.62	0.04
Current permitted limits (based on flare emissions)	1	23.9	57.4	77	16.1	1.97

Please note that SO<sub>2</sub> short-term emissions (lbs/hr) are changed significantly (from 86.1 lbs/hr to 19.7 lbs/hr for each flare) based on dispersion modeling results, actual H<sub>2</sub>S concentration in LFG found in quarterly samples and the maximum LFG flow rate (4500 scfm) through each flare. The 77 tons/yr potential-to-emit (by both flares combined) shown above is the current permitted limit and it remains the same in the attached draft/proposed permit.

**Potential-to-Emit (PTE)**

The PTEs (tpy) are based on the maximum flow capacity of each flare (4500 scfm) and the total allowable flow (3780 MMscf), emission factors, and site-specific data collected over time. The following table shows the PTEs based on flare emissions with some minor changes (decreased emissions for NMOCs, PM and HCl):

Table 5: PTEs

	NMOCs	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM	HCl
Rolling 12-month flare emissions (tpy)	0.61 (decreased from 1 tpy to 0.61 tpy)	23.9	57.4	77	16 (decreased from 16.1 tpy to 16 tpy)	1.11 (decreased from 1.97 tpy to 1.11 tpy)

The calculated emissions for last 5 years appeared to be low because the major portion of the collected LFG was not burnt through the flares. It was sent to nearby power plant for energy use. The facility continues the same practice as of now. Typically, the facility operates the onsite flares only when the end user cannot take the LFG from the site for various reasons. Based on emissions inventory reports (EIR)\* and onsite inspections, the facility did not violate the emission limitations identified by the permit nor did it exceed any major source threshold limits since the Renewal 1 was issued. The following table summarizes the NO<sub>x</sub> and SO<sub>2</sub> emissions for the time covering 2010-2006:

Table 6: Actual NO<sub>x</sub> and SO<sub>2</sub> emissions in last 5 years.

Rolling 12-month flare emissions (tpy)	NO <sub>x</sub>	SO <sub>2</sub>
2010	1.13	4.52
2009	2.40	10.47
2008	1.20	6.80
2007	1.40	6.20
2006	2.79	14.20

\*2011 EIR is not available at this time.

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Note that the facility is not expecting any new construction or modification of their existing equipment at this time. The facility is not increasing any pollutants identified by the existing Title V operating permit. Rather, as identified by Tables 5 and 10, in several cases, the currently permitted pollutants are recommended to be decreased. Therefore, NSR, MNSR, or PSD reviews are not necessary for this facility at this time.

### Dispersion modeling, H<sub>2</sub>S concentration in LFG and SO<sub>2</sub> emissions

#### Dispersion modeling

DSWA submitted their dispersion modeling (AERMOD) results to DAQ on 12/12/11. The report was prepared by SCS Engineers, an environmental consulting company. Note that the initial discussions on this dispersion modeling started in October 2010 with DSWA where I was present with DAQ modeler. During our initial discussions, I emphasized *Flux Chamber Method* (or, any other inexpensive method approved by DAQ) to identify site-specific fugitive emissions (LFG with H<sub>2</sub>S) to comply with 7 **DE Admin Code** 1103, Section 9. (See standards on Page 2) DSWA declined to use the *Flux Chamber* or other methods that can be used for modeling purposes.

Note that the other purpose of the modeling was to identify an action limit for H<sub>2</sub>S in LFG as fugitive emissions based on its concentration measured and analyzed by ASTM quarterly.

The results of dispersion modeling are shown in Table 7.

Table 7: Dispersion modeling outcomes.

H <sub>2</sub> S Concentration in LFG	AAQS (Avg. period)	AAQS (ppm)	Above AAQS (Y/N)
890	1 hr	0.03	Y
	3 min	0.06	Y
500	1 hr	0.03	N
	3 min	0.06	Y
400	1 hr	0.03	N
	3 min	0.06	N

In conclusion, Page 16 of the dispersion modeling report submitted by the company states the following, "DSWA is proposing an action limit based on 750 ppm measured in collected LFG on a rolling annual basis. If the rolling annual average exceeds the action limit, DSWA will conduct perimeter H<sub>2</sub>S emission measurements to confirm that emission concentrations are below AAQS."

The above referenced report does not explain how the facility will keep the H<sub>2</sub>S in LFG low to comply with the standards. Furthermore, the standards are not set rolling annual basis.

#### H<sub>2</sub>S concentration in LFG

Based on quarterly lab analysis, the following table summarizes the maximum H<sub>2</sub>S in LFG found in last 5 years (by ASTM):

Table 8: H<sub>2</sub>S concentration in LFG for last 5 years.

Calendar year	Max H <sub>2</sub> S in LFG (ppm)	Min H <sub>2</sub> S in LFG (ppm)
2011	400	220
2010	400	330

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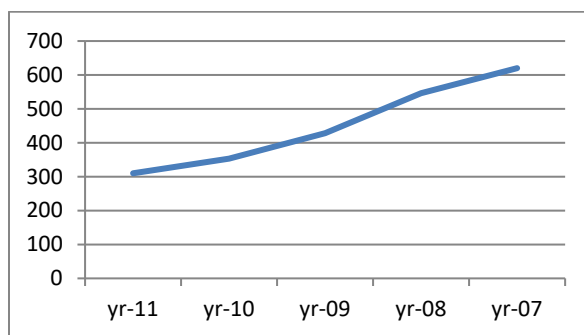
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Calendar year	Max H <sub>2</sub> S in LFG (ppm)	Min H <sub>2</sub> S in LFG (ppm)
2009	490	380
2008	589	491
2007	720	580

The following graph shows the yearly average H<sub>2</sub>S concentration (ppm) in LFG for the last 5 years:



### **Discussions/Recommendations on new permit conditions**

1. Table 8 shows that 490 ppm was the maximum concentration of H<sub>2</sub>S in LFG found in last three years. Based on dispersion modeling results, quarterly H<sub>2</sub>S data for last three years, and my consultation with DAQ management, I recommend 450 ppm be considered the action level instead of 750 ppm proposed by DSWA. I also recommend that the attached permit include the following condition:

*DSWA shall conduct perimeter H<sub>2</sub>S survey (measurement) if H<sub>2</sub>S concentration in LFG exceeds 450 ppm in two consecutive quarters by laboratory analysis (ASTM). The perimeter H<sub>2</sub>S measurements shall be conducted within seventy two (72) hours upon receiving the laboratory results and maintain this information for the Department's reviews. [See Condition 3-Table 1(f)(2)(v)(B) on Page 41]*

2. As shown in Table 7, at 500 ppm, H<sub>2</sub>S meets the 1-hr AAQS but not the short-term 3-minute standard. In reality, the actual H<sub>2</sub>S concentration on the landfill as fugitive emissions should be less than the concentration found by lab analysis because of high dilution of ambient air on the landfill surface. In addition, the samples taken for quarterly laboratory analysis are from the header pipes where such dilution is minimized. I recommend that 500 ppm be used for SO<sub>2</sub> calculation as shown below: [AP-42 (October 1998), Section 2.4- Municipal Solid Waste Landfill, equations 2, 3 & 7, the maximum LFG flow through one flare (Q), 500 ppm H<sub>2</sub>S concentration in LFG, and CH<sub>4</sub> content in LFG are used for this calculation; Q=4500 scfm=127.4 m<sup>3</sup>/min, T=Temperature of LFG=25°C=298°K, 1.82=Multiplication factor recommended by equation 3 to identify the emission rate of pollutant.]

$$M_{SO_2} = \frac{500 \text{ ppm} \times 1.82 \times 127.4 \text{ m}^3/\text{min} \times 50\% \text{ CH}_4 \times 64 \text{ g/mol SO}_2 \times 2.2 \text{ lb/kg} \times 98\% \times 60 \text{ min/hr}}{0.00008205 \text{ m}^3\text{-atm/gmol-}^\circ\text{K} \times 1000 \text{ g/kg} \times 298^\circ\text{K} \times 10^6}$$

$$M_{SO_2} = 19.7 \text{ lbs/hr (from each flare)}$$

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At 500 ppm H<sub>2</sub>S in LFG, the PTE of SO<sub>2</sub>=138.25 tpy. This is based on the fact that the total amount of LFG burned through both flares combined should not exceed 3780 MMscf per rolling 12-month period. As discussed on Page 4, the SO<sub>2</sub> emissions from both flares combined will remain the same, 77 tons/yr. Note that the landfill's current LFG flow rate at the gas plant is around 4900 scfm (it varies day-to-day for various reasons). As per the information submitted by DSWA in the past, the peak flow at the gas plant is expected to be around 11,160 scfm in 2036. Page 36 of the attached draft/proposed permit has a condition [Condition 3-Table 1(d)(1)(iv)(C)] that outlines the upgrading of the LFG collection system including the gas plant so that the future flow can be managed properly.

3. In addition to perimeter monitoring described above, I recommend the following permit condition:

*Research and explore various H<sub>2</sub>S generation reduction strategies and control options and implement these strategies as necessary so that the H<sub>2</sub>S concentration in the landfill gas remains consistently low and meets the Ambient Air Quality Standard (AAQS) outlined by 7 DE Admin Code 1103, Section 9 for this pollutant. The facility must submit an annual report summarizing its findings to the Department by the end of March of each calendar year for the previous year.*  
[See Condition 3-Table 1(f)(2)(x)(B) on Pages 40- 41]

## CHANGES REQUESTED BY DSWA AND DAQ COMMENTS

The table below summarizes DAQ comments on changes requested by DSWA:

Table 9: Changes requested by DSWA and DAQ comments.

Item Number	Point Description	Changes Requested	DAQ comments
1	N/A	Please consider renaming the permit so that instead of "Renewal-1" it is designated as "R-2". This would be consistent with the naming convention used for the Title V permits at Central and Southern landfills, and will make reference to the permit fit on all DNREC forms.	"Renewal-2" will remain as part of the permit number.  DSWA may choose "R" instead of 'Renewal' for reporting purpose.
2	All	Renaming of emission points has been done through AQM-1001.	No comments.
3	Zink Flares A and B	Removal of the H <sub>2</sub> S pretreatment system. The system does not meet the needs of the landfill. Please note that all emissions calculations have been performed omitting the operation of this unit.	The attached draft/proposed Renewal-2 excludes H <sub>2</sub> S pretreatment system.  The application failed to identify that the H <sub>2</sub> S pretreatment system was not functional except initial startup and performance testing.
4	Zink Flares A and B; Passive	This application does not include HAP emission information. DSWA has requested the Department	HCl flare emission is in the attached permit. DAQ letter dated 2/16/11 sent to DSWA includes the

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Item Number	Point Description	Changes Requested	DAQ comments
	Flares	provide regulatory clarification on this issue in our January 6, 2011 correspondence (att.).	justifications.
5	Passive Flares	Passive flare emissions are estimates due to lack of flow and operation monitoring. Therefore, DSWA requests that this item be changed to replace the word "calculate" with "estimate". The new statement would read, "The Company shall <i>estimate</i> the emissions...."	By changing the word from "calculate" to "estimate" will not change the approach DSWA taking to quantify passive flare emissions. The word "calculate" has been replaced by "calculate/estimate."  See Condition 3-Table 1(a)(1)(x)(B) on Page 17.
6	Landfill	Condition 3-Table 1(c)(1)(vii)  Please add a note that sections (A) through (E) address surface emission monitoring equipment only.	This condition has been incorporated into the attached draft permit. See Page 25 of the attached permit.
7	Landfill Facility Wide	Condition 3-Table 1(c)(1)(ix)(L) and (f)(2)(ix)  These sections should be revised to be consistent with Reg. 2 permits and the odor protocol submitted to and approved by the Department. Therefore, DSWA requests the removal of humidity and wind speed from the retained information.	This condition will remain in place with the revision shown below:  Record weather conditions during monitoring events that include:  <u>1</u> Ambient air temperature; and <u>2</u> Wind direction.  In addition to ambient air temperature and wind direction, record humidity and average wind speed when odor is detected along the perimeter exterior of the landfill. [See Condition 3-Table 1(f)(2)(v)(A) on Pages 40-41]  The reporting condition states the following:  The owner/operator shall submit an odor survey summary log by the end of each calendar month for the previous month. The odor survey summary log shall include all information outlined by Condition 3-Table 1(f)(2)(v)(A). Odor detected beyond the facility property line

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Item Number	Point Description	Changes Requested	DAQ comments
			should be notified to the Department immediately. [See Page 40 of the attached permit]
8	Landfill	Condition 3-Table 1(c)(2)(iv)(C)  Please revise this section to say that decommissioned wells may be (but are not required to be) backfilled with soil. As previously approved by the Department, DSWA will use decommissioned wells as gas conduits and this requires that the wells are not backfilled.	This condition has been revised by adding the word 'as appropriate'. See Page 31 of the attached permit.
9	Landfill	H <sub>2</sub> S- The Department is currently performing air modeling for CIL H <sub>2</sub> S based on information submitted by DSWA. The analysis is not complete at this time.	Prepared by SCS Engineers, DSWA submitted the air dispersion modeling to DAQ on 12/12/11.

**OTHER CHANGES IN THE ATTACHED PERMIT**

The following table summarizes all other changes in the attached permit.

Table 10: Other Changes.

Item Number	Other Changes	Comments/Discussions
1	Conduct at least one Reference Method (RM) 22 visible emissions observation within fifteen (15) calendar days of initial installation and after each extension or relocation.	This condition has been added for passive flares. See Condition 3-Table 1(a)(1)(vii) on Page 17.  Note that passive flare emissions are not counted as part of the facility wide emissions. Passive flares do not have flow meters to record flow rates. In addition, site-specific flow rates through passive flares also vary. However, passive flares are used at CIL regularly. The facility can use up to 12 such units as needed basis. Therefore, a RM 22 requirement has been added to the permit. Note that DSWA is required to submit passive flare emissions to DAQ Emission Inventory Group based on the emission factors and the best engineering judgment.
2	A detailed site plan showing collection pipes and connections to the passive flares has been deleted from the	CIL routinely uses passive flares and similar site plan was submitted by the company in the past. Therefore, it is no longer necessary to repeat this

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Item Number	Other Changes	Comments/Discussions
	existing permit.	plan for every installation and relocation of the units.
3	The flares shall be operated with no visible emissions as determined by Reference Method 22 (RM 22), except for periods not to exceed a total of five (5) minutes during any two (2) consecutive hours.	This condition has been added as per 40 CFR Part 60.18(c).  See Page 18.
4	The short-term flare PM emissions from each flare has been changed from 4.6 lbs/hr to 2.3 lbs/hr.	The calculation is based on AP-42 factor (Table 2.4-4), and the maximum flow rate through each flare:  $270 \text{ kg}/10^6 \text{ dscm CH}_4 \times 127.4 \text{ m}^3/\text{min} \times 50\% \text{ CH}_4 \times 2.2 \text{ lbs/kg} \times 60 \text{ min/hr} = 2.27 \text{ lbs/hr} \sim 2.3 \text{ lbs/hr}$  (Note: $4500 \text{ ft}^3/\text{min} = 127.4 \text{ m}^3/\text{min} = \text{max flow through one flare}$ )  See Condition 3-Table 1(b)(1)(ii) on Page 19.
5	The NMOC emissions has been changed from 1 ton/yr to 0.61 tons/hr (rolling 12-month basis)	Based on the test data of last 4 quarters (2011 calendar year average=161 ppm as hexane), NMOC emission limitation has been revised. The permit has tpy emission limitation for NMOCs based on the total allowable flow through both flares combined (3780 MMscf).  See Condition 3-Table 1(b)(1)(ii) on Page 19.
6	The short-term flare SO <sub>2</sub> emissions from each flare have been revised from 86.1 lbs/hr to 19.7 lbs/hr.	See H <sub>2</sub> S fugitive emissions modeling and SO <sub>2</sub> emissions on Pages 5 and 6 of this memorandum.  Revised condition is on Page 19 of the attached permit.
7	The HCl emission has been revised from 1.97 tons/yr to 1.11 tons/yr.	The tpy emission has been revised from 1.97 tpy to 1.11 tpy based on last 4 quarter's average value of Cl <sup>-</sup> (6.9 ppm <sub>v</sub> ) and the total allowable flow rate through both flares combined.  See Condition 3-Table 1(b)(1)(ii) on Page 19.
8	The owner/operator shall follow all applicable requirements for the flares as outlined by 40 CFR Part §60.756-Monitoring of operations and 40 CFR Part 60.18(c)-General control device requirements.	This condition has been added to the existing condition as it is appropriate for NSPS MSW landfills.  See Condition 3-Table 1(b)(1)(vi)(G) on Page 19.
9	The owner or operator shall take every measure to complete a quarterly test, and provide time for a	The addition of this condition is based on the past history and to make sure that the required CH <sub>4</sub> and H <sub>2</sub> S in LFG sampling and analysis are completed

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	repeat test within that quarter, if necessary.	within the quarter.  The above condition has been added to the existing Condition 3-Table 1(c)(vii)(I). See Page 27.
10	The facility's emission limitations are based on enclosed flare emissions.	<p>The condition under (f)(1)(ii) has been revised <u>from</u> <i>The facility's emission limitations are based on all unit-specific emissions outlined by this permit</i> <u>to</u> <i>The facility's emission limitations are based on enclosed flare emissions as outlined by Condition 3-Table 1(b)(1)(ii).</i></p> <p>The revised version is appropriate since passive flare emissions and landfill fugitive gas emissions are not included to the attached permit as part of the total (facility wide) emissions from this facility. Note that the passive flares are used to control landfill odor and they are used for temporary basis (from few hours to few days). The combined emissions from enclosed and passive flares are in compliance with the emission limitations outlined by the permit . As for example, in 2011 calendar year (covering January-December) , the combined NO<sub>x</sub> emissions =1.21 tons (0.76 tons from enclosed fares and 0.45 tons from passive flares) while permitted limit =23.9 tons. Similarly, the combined SO<sub>2</sub> emissions =3.32 tons (2.72 tons from enclosed fares and 0.60 tons from passive flares) while permitted limit =77 tons. Although the passive flare emissions are not part of the facility wide emissions at this time, they are tracked by the Department through emissions inventory reports.</p> <p>See Condition 3-Table 1(f)(1)(ii) on Page 39.</p>
11	Reporting requirement for H <sub>2</sub> S generation reduction strategies and control options has been added under (f)(2)-Facility wide.	<p>This requirement is recommended and added to the attached permit since the Edge Moor area is often subject to odor complaints, CIL removed the H<sub>2</sub>S abatement system from the site and the site has a history of high H<sub>2</sub>S generation and odor complaints in the past.</p> <p>See Pages 40-41 of the attached permit.</p>
12	A new condition on perimeter H <sub>2</sub> S survey (measurement) is added to the attached permit.	If H <sub>2</sub> S concentration in LFG exceeds 450 ppm in two consecutive quarters by laboratory analysis (ASTM) then the facility must conduct a perimeter H <sub>2</sub> S survey (measurement). 450 ppm is proposed

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		as an action level while DSWA proposed 750 ppm for the same purpose. The recommended limit is based on the data collected for last three years.  See Page 6 of this report and Page 41 of the attached permit.

## REGULATORY REVIEW

This is a Title V renewal. No new regulations have been identified or cited in the attached permit compared to those that are in the existing permit. For additional regulatory review, see "Potential-to-Emit" on Page 4.

Below is a summary of all applicable regulations:

DSWA's NSWMC is a major source because the facility meets the following three conditions of 40 CFR Part 60, Subpart Cc, *Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills*: The landfill has been accepting waste since November 8, 1987, the landfill has a design capacity greater than 2.5 million megagrams, and the landfill has a calculated nonmethane organic compound (NMOC) emission which exceeds 50 megagrams per year. The Company is a refuse system facility, primary SIC code 4953.

The primary applicable requirements are State of Delaware Air Pollution Control Regulation (7 **DE Admin Codes**) 1102, 1104, 1106, 1108, 1114, 1119, 1120, 1130, 1144; and EPA Landfill Air Pollution Regulations 40 CFR Part 60, Subparts Cc and WWW. Note that Subpart WWW has been adopted by the state by reference (7 **DE Admin Code** 1120, Section 28).

*Part 63, Subpart AAAAA* (National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills) is not an applicable requirement. The applicability (§ 63.1930) section of this Subpart states: This subpart establishes national emission standards for hazardous air pollutants for existing and new municipal solid waste (MSW) landfills. This subpart requires all landfills described in §63.1935 to meet the requirements of 40 CFR part 60, subpart Cc or WWW and requires timely control of bioreactors. CIL is not considered a bioreactor landfill.

Note that the approved *Delaware 111(d) plan* (who is responsible for compliance activities where multiple parties are involved in the ownership or associated LFG collection, control, and/or treatment) is not applicable to CIL since the landfill is owned and operated by the same company and multiple parties are not involved at this time.

The attached permit includes several conditions from 7 **DE Admin Code** 1144. The facility has a 55 kw diesel fired emergency generator listed under insignificant activities. (Emission Unit e, Page 36)

7 **DE Admin Code** 1125, (Requirements for Preconstruction Review) is not applicable to the facility at this time. The permit application does not identify any new construction at the site. The previously constructed H<sub>2</sub>S pretreatment system is no longer at the site. The facility's unit-specific or facility wide emissions are not expected to increase. Rather, in some cases, they are recommended to be decreased.

### CAM applicability

40 CFR Part 64, Compliance Assurance Monitoring (CAM), does not apply to any of the emission units at this facility. The facility is exempt from CAM according to Section 64.2(b)(1)(i) since the facility is subject

## MEMORANDUM

DSWA-Cherry Island Landfill: *Draft/Proposed* Permit: AQM-003/00111-Renewal 2

March 7, 2012

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to an emission limitation or standard proposed by the Administrator after November 15, 1990 pursuant to Section 111 or 112 of the Act.

### MACT requirements

The following two MACT requirements are in the attached draft permit (Pages 24 and 33). These requirements are not new and they are in the existing Title V permit.

- Compliance reporting- every 6 months.
- Startup, Shutdown and Malfunction plan (SSM plan).

### Insignificant activities

CIL has one diesel (No. 2 oil) fired 55 KW (73.75 hp) emergency generator (EG or unit) that is used at the scale house during power outages. This unit is already in the existing Title V permit under insignificant activities. Note that the equipment is exempt as per 7 **DE Admin Code** 1102, Appendix A because the fuel burning equipment has an engine power rating <450 kw. The EG shall follow the definition of 'emergency generator' and the new requirement for sulfur content ( $\leq 0.05\%$  sulfur by wt) as specified in 7 **DE Admin Code** 1144, Section 5.1. These requirements are already in the existing permit. (See Pages 36-39)

### Operational flexibility

No operational flexibility other than the standard language outlined in Condition 4, Page 44 of the draft permit.

### Compliance schedule

The Company is in compliance with the applicable requirements. No compliance schedule was submitted.

### Permit shield

No permit shield has been requested. The permit shield option of 7 **DE Admin Codes** 1130, Section 6.6 provides that compliance with the terms and conditions of the permit shall constitute compliance with 7 Del. C., Chapter 60, for the discharge of any air contaminant specifically identified in the permit application as of the date of permit issuance. This permit does not provide a permit shield.

## CONCLUSION/RECOMMENDATIONS

- The facility took a longer time than expected to submit their dispersion modeling results. Therefore, the preparation of the attached draft/proposed permit took relatively longer time than expected.
- The attached draft/proposed permit revised and recommended several permit conditions with justification.
- The attached draft/proposed permit, permit application and application related materials will be advertised for public review and comments. In accordance with the provisions of EPA's operating permit program promulgated in 40 CFR Part 70, the states of Maryland, New Jersey and Pennsylvania will be notified of intent to approve a permit renewal for DSWA's Northern Solid Waste Management Center (Cherry Island Landfill). In addition, a copy of the draft/proposed permit renewal will be sent to Mr. Pasquale Canzano or Richard P. Watson, the responsible official for Delaware Solid Waste Authority. A copy of the draft/proposed permit and the technical memorandum will be sent to the EPA Region III Office for comments.

PEF:TMH:SAT:sb

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pc: Dover File EPA Region III (electronic version)

**TITLE V PERMIT REVIEW  
PERMIT APPLICATION CHECKLIST**

STATE: DE

SOURCE NAME: Delaware Solid Waste Authority-Cherry Island Landfill

AFS PLANT ID: 1000300111

SOURCE TYPE: Municipal Solid Waste Disposal

PERMIT #: **AQM-003/00111-Renewal 2**

SIC #: 4953

SOURCE LOCATION (COUNTY): New Castle, DE

I. Is this a general permit? If yes, which one? (Go to Part III).....NO  
If no, go to Part II.

II. PROGRAM IMPLEMENTATION

Does this permit contain "streamlined limits" (per White Paper #2).....NO

Does this permit contain requirements/provisions for:

1. Periodic Monitoring.....YES
2. NESHAP/MACT (if so, list subparts).Subpart AAAA, WWW.....YES
3. Case-by-Case MACT.....NO
4. NSPS (if so, list subparts).Subpart Cc.....YES
5. PSD/NSR.....NO
6. Acid Rain Phase II Permit.....NO
7. Potential-to-Emit Limits.....YES
8. Consent Order Agreement.....NO
9. NO<sub>x</sub> RACT.....NO
10. VOC RACT.....NO
11. Does permit application contain confidential information?.....NO

III. COMPLIANCE STATUS

Is the Source subject to a compliance schedule?.....NO

IV. EPA REVIEW

1. Do you want EPA to review all or part of this permit?.....YES
2. Are there other issues you would like to call to EPA's attention?.....NO

STATE CONTACT: Shaikh A. Tayeb  
PHONE: 302-323-4542

DATE: March 7, 2012

(for EPA use only) dated entered

init

action

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